ENERGY AND ENVIRONMENT CABINET

Department for Environmental Protection

Division of Waste Management

(New Administrative Regulation)

401 KAR 48:208. Petroleum contaminated soil treatment facility liner high-permeability layer quality assurance and quality control.

RELATES TO: KRS Subchapters 224.01, 224.10, 224.40, 224.43, 224.99, 322.010(16)

STATUTORY AUTHORITY: KRS 224.10-100, 224.40-305

NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.40-100(19)(c), (24) and (28) requires the cabinet to adopt rules and administrative regulations for the permitting, management, processing or disposal of wastes. KRS 224.40-305 requires that persons engaging in the management, processing, and disposal of waste obtain a permit. This administrative regulation establishes the liner quality assurance and quality control testing requirements for petroleum contaminated soil treatment facilities.

Section 1. Definitions. As used in this administrative regulation:

(1) "Certifying engineer" means the professional engineer that implements the petroleum contaminated soil treatment facility construction quality assurance plan;

(2) "Petroleum contaminated soil" means silt, sand, clay, gravel, or other earthen material; asphalt, concrete, or absorbent materials containing hydrocarbon concentrations above the levels established in 401 KAR 48:205, Section 6, Table 2, but does not exhibit a hazardous characteristic or is not a listed hazardous waste as defined in 401 KAR Chapter 31.

(3) "Petroleum contaminated soil treatment facility" means a solid waste site or facility where petroleum contaminated soil is treated to reduce contaminant concentrations to or below the levels established in 401 KAR 48:205, Section 6, Table 2.

(4) "Quality assurance" means the procedures that are initiated by the owner or operator and implemented by the professional engineer to ensure that the construction of the petroleum contaminated soil treatment facility meet design specifications and performance requirements; and

(5) "Quality control" means the system of control implemented by the manufacturer, fabricator, installer, construction contractor, operator or other person in order to meet construction specifications for the construction of the petroleum contaminated soil treatment facility.

Section 2. Applicability. (1) The quality assurance and quality control requirements of this administrative regulation apply to the construction of liners for biopiles at petroleum contaminated soil treatment facilities.

(2) The liner design requirements for biopiles are established in 401 KAR 48:205, Section 3 for petroleum contaminated soil treatment facilities.

Section 3. Specific Precipitation Drainage, Leachate Collection or Gas Collection High Permeability Soil Requirement. (1) The high permeability soil is the sand or gravel that shall be used for the leachate collection layer on the biopile liner at a petroleum contaminated soil treatment facility.

(a) High permeability soil components shall have a minimum coefficient of permeability of 1×10^{-3} centimeters per second.

(b) The soil shall be placed without damaging the collection and removal system or liner components.

(c) The soil material shall be processed and substantially free of tree roots, wood or other decayable materials and large rocks.

(d) High permeability soil components shall be resistive to leachate, so that clogging of the layer shall not cause the hydraulic head on the liner to exceed twelve (12) inches in depth.

(2) Certification requirements. (a) The certifying engineer shall include in the form DEP 8064, Construction Progress Report for a Petroleum Contaminated Soil Treatment Facility, as incorporated by reference in 401 KAR 47:205, Section 10, a discussion of quality assurance and quality control testing.

(b) The testing procedures and protocols shall be ASTM International, or other test method based on the applicable standards of practice as established in KRS 322.010(16) for certification by a professional engineer.

(c) The results of testing shall be included in the form DEP 8064, Construction Progress Report for a Petroleum Contaminated Soil Treatment Facility, as incorporated by reference in 401 KAR 47:205, Section 10, including documentation of failed test results, descriptions of the procedures used to correct the improperly installed material, and statements of retesting performed in accordance with the following requirements:

1. The certifying engineer shall review the results of the quality control testing by the supplier of a high permeability soil component;

2. The quality control and quality assurance testing shall ensure that the specified material meets the permeability and clogging preventive requirement of subsection (1)(d) of this section;

3. The following quality control tests shall be performed on a minimum of at least one (1) sample from each soil classification:

a. Classification of soils for engineering purposes using the following:

(i) Soil particle size; and

(ii) Insoluble residue or calcium carbonate content.

b. Hydraulic conductivity.

(d) Quality assurance testing included in paragraph (b) of this subsection shall be compared to and evaluated against the quality control testing of paragraph (a) of this subsection based on the applicable standards of practice as established in KRS 322.010(16) for certification by a professional engineer.

(e) Quality assurance testing shall be based on the applicable standards of practice as established in KRS 322.010(16) for certification by a professional engineer and shall be performed at the following minimum frequency for each soil classification:

1. One (1) analysis of soil particle size for every 10,000 cubic yards of soil material;

2. One (1) analysis of soil classification for engineering purposes for each 20,000 cubic yards of soil material;

3. One (1) insoluble residue in carbonate aggregates test, for every 20,000 cubic yards of soil material using D3042-03, "Standard Test Method for Insoluble Residue in Carbonate Aggregates" modified for a pH of no greater than 4.0 or similar test based on the applicable standards of practice as established in KRS 322.010(16) for certification by a professional engineer; and

4. One (1) hydraulic conductivity test for every 20,000 cubic yards of soil material.

(f)1. The completed form DEP 8064, Construction Progress Report for a Petroleum Contaminated Soil Treatment Facility, as incorporated by reference in 401 KAR 47:205, Section 10, shall show the finished elevation of each high permeability soil component of the liner referenced to existing site control, using a Three Dimensional Terrain Model on Computer

Assisted Design Drawing (CADD), cross-section, or another method of equivalent accuracy and quality; and

2. These finished elevations shall serve as documentation and reference data for future volume calculations.

Section 4. Specific Synthetic Drainage Layer (SDL) Requirements for Bottom Liners. A Synthetic Drainage Layer (SDL) shall have an allowable flow rate equivalent to the design requirements of the leachate collection layer as established in Section 2 of this administrative regulation.

(1) Materials required. (a) The SDL shall have an allowable flow rate that meets the requirements of this administrative regulation as determined by GRI standard GC-8 "Determination of the Allowable Flow Rate of a Drainage Geocomposite" or similar method based on the applicable standards of practice for certification by a professional engineer as established in KRS 322.010(16).

(b) The SDL shall not be adversely affected, chemically or physically, by waste placement or leachate.

(c)1. Documentation shall be submitted to ensure chemical compatibility of the SDL chosen; or

2. In the absence of the appropriate documentation, chemical compatibility testing shall be performed using Method 9090A, "Compatibility Test for Wastes and Membrane Liners", SW-846 Update IV of the Third Edition which is incorporated by reference in 401 KAR 48:205, Section 10; or ASTM D6388-99 (2005), "Standard Practice for Tests to Evaluate the Chemical Resistance of Geonets to Liquids", or other similar test method based on the applicable standards of practice as established in KRS 322.010(16) for certification by a professional engineer.

(2) Construction requirements. (a) The SDL shall be installed in accordance with the requirements of the approved engineering plans, reports, and specifications in the permit and manufacturer's recommendations.

(b) The certifying engineer shall ensure that the SDL installation, at a minimum, shall conform to the following:

1. The SDL shall have a nominal thickness that is specified by the professional engineer to meet the design flow of the leachate collection as established in 401 KAR 48:205, Section 3;

2. The SDL shall have a transmissivity that is specified by the professional engineer to meet the design flow of the leachate collection layer as established in 401 KAR 48:205, Section 3;

3. The SDL shall be designed to withstand the calculated tensile forces acting upon the SDL to ensure that stability shall be maintained;

4. The anchor trench shall be designed to withstand the calculated tensile forces acting upon the SDL to ensure that stability shall be maintained;

5. Field seams shall be oriented parallel to the line of maximum slope, which is oriented along, not across the slope; and

6. In corners and irregularly-shaped locations, the number of field seams shall be minimized.

(3) Certification requirements. (a) The certifying engineer shall include in the form DEP 8064, Construction Progress Report for a Petroleum Contaminated Soil Treatment Facility, as incorporated by reference in 401 KAR 47:205, Section 10, a discussion of the reviewed data resulting from the quality assurance and quality control testing.

(b) The results of testing shall be included in the form DEP 8064, Construction Progress Report for a Petroleum Contaminated Soil Treatment Facility, as incorporated by reference in

401 KAR 47:205, Section 10, including documentation of failed test results, descriptions of the procedures used to repair the failed material, and documentation of retesting performed.

(c) The certifying engineer shall certify, after review of the quality control testing of the SDL, if the material meets the requirements of the approved engineering plans, reports, and specifications in the petroleum contaminated soil treatment facility permit.

(d) Before installing an SDL, the following information shall be available to the certifying engineer for approval:

1. Origin and identification of the raw materials used to manufacture the SDL;

2. Copies of quality control certificates issued by the producer of the raw materials used to manufacture the SDL; and

3. Reports of tests conducted to verify the quality of the raw materials used to manufacture the SDL.

(e) Tests shall be performed using appropriate ASTM International, GRI or other similar specifications based on the applicable standards of practice as established in KRS 322.010(16) for certification by a professional engineer.

(f)1. The certifying engineer shall verify through appropriate documentation that the quality control testing of an SDL made at the factory took place in accordance with the manufacturer's quality control plan, which is based on the GRI standard GC-8 "Standard Guide for Determination of the Allowable Flow Rate of a Drainage Geocomposite" or appropriate specifications based on the applicable standards of practice as established in KRS 322.010(16) for certification by a professional engineer.

2. Quality assurance testing performed under the supervision of the certifying engineer shall assure conformity of the SDL with the approved engineering plans in the permit and the GRI

standard GC-8 "Standard Guide for Determination of the Allowable Flow Rate of a Drainage Geocomposite" or appropriate specifications based on the applicable standards of practice as established in KRS 322.010(16) for certification by a professional engineer.

Section 5. Incorporation by Reference. (1) The following material is incorporated by reference:

(a) ASTM D3042-03 "Standard Test Method for Insoluble Residue in Carbonate Aggregates" modified for a pH of no greater than 4.0;

(b) GRI standard GC-8 "Standard Guide for Determination of the Allowable Flow Rate of a Drainage Geocomposite"; and

(c) ASTM D6388-99(2005) "Standard Practice for Tests to Evaluate the Chemical Resistance of Geonets to Liquids".

(2) The documents listed in this administrative regulation are available from the following organizations:

(a) ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA, or from their website at http://www.astm.org/index.shtml;

(b) Geosynthetic Research Institute, 475 Kedron Avenue, Folsom, PA 19033-1208 USA, or from their website at http://www.geosynthetic-institute.org/; or

(c) This material may be inspected, copied, or obtained, subject to applicable copyright law, at the Division of Waste Management, 200 Fair Oaks Lane, Second Floor, Frankfort, Kentucky 40601, Monday through Friday, 8 a.m. to 4:30 p.m., excluding state holidays.

401 KAR 48:208 approved for filing.

4/14/11
Date

Leonard K. Peters, Secretary
Energy and Environment Cabinet

PUBLIC HEARING AND PUBLIC COMMENT PERIOD: A public hearing on this administrative regulation shall be held on May 23, 2011 at 10:00 A.M. (Eastern Time) at 300 Fair Oaks, Frankfort, KY 40601. Individuals interested in being heard at this hearing shall notify this agency in writing by May 16, 2011, five workdays prior to the hearing, of their intent to attend. If no notification of intent to attend the hearing is received by that date, the hearing may be cancelled. This hearing is open to the public. Any person who wishes to be heard will be given an opportunity to comment on the proposed administrative regulation. A transcript of the public hearing will not be made unless a written request for a transcript is made. If you do not wish to be heard at the public hearing, you may submit written comments on the proposed administrative regulation. Written comments shall be accepted until May 31, 2011. Send written notification of intent to be heard at the public hearing or written comments on the proposed administrative regulation to the contact person.

CONTACT PERSON: Kelli Reynolds
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REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

Contact Person: Kelli Reynolds

(1) Provide a brief summary of:

(a) What this administrative regulation does:

This administrative regulation establishes the liner quality assurance and quality control testing requirements for petroleum contaminated soil treatment facilities.

(b) The necessity of this administrative regulation:

This administrative regulation is necessary to establish treatment facility liner high-permeability layer quality assurance and quality control for petroleum contaminated soil treatment facilities.

(c) How this administrative regulation conforms to the content of the authorizing statutes:

This administrative regulation conforms to the content of the authorizing statutes by establish treatment facility liner high-permeability layer quality assurance and quality control for petroleum contaminated soil treatment facilities.

(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes:

This administrative regulation will assist in the effective administration of the statues by establish treatment facility liner high-permeability layer quality assurance and quality control for petroleum contaminated soil treatment facilities which will protect the environment.

(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:

(a) How the amendment will change this existing administrative regulation: NA

(b) The necessity of the amendment to this administrative regulation: NA

(c) How the amendment conforms to the content of the authorizing statutes: NA

(d) How the amendment will assist in the effective administration of the statutes: NA

(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation:

Businesses that treat petroleum contaminated soils will be affected by this administration

regulation. There are currently 3 permitted by the Solid Waste Branch.

(4) Provide an analysis of how the entities identified in question (3) will be impacted by either the implementation of this administrative regulation, if new, or by the change, if it is an amendment, including:

(a) List the actions that each of the regulated entities identified in question (3) will have to take to comply with this administrative regulation or amendment:

Regulated entities will have to comply with the requirements established for treatment facility liner high-permeability layer quality assurance and quality control for petroleum contaminated soil treatment facilities. This includes the specific high permeability soil requirements and specific drainage layer requirements for the bottom liner of these types of facilities.

(b) In complying with this administrative regulation or amendment, how much will it cost each of the entities identified in question (3):

The cost to implement this type of permit for an existing facility would be approximately $175,000 per acre for the plastic liner and the storage building will be dependent on the size of the building. Groundwater monitoring will not be an additional cost since the existing facilities have monitoring wells already installed.

(c) As a result of compliance, what benefits will accrue to the entities identified in question (3):

(5) Provide an estimate of how much it will cost the administrative body to implement this administrative regulation:

(a) Initially: None

(b) On a continuing basis: None

(6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation:

This regulation will implemented and enforced using the solid waste permit feels collected pursuant to 401 KAR 47:090 and general funds.

(7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment:

There will be no increase of fees and no additional funding is necessary to implement this regulation.

(8) State whether or not this administrative regulation established any fees or directly or indirectly increased any fees:

This administrative regulation does not establish any fees.

(9) TIERING: Is tiering applied? (Explain why or why not)

Tiering is not applied. The requirements established for treatment facility liner high-permeability layer quality assurance and quality control for petroleum contaminated soil treatment facilities. This applies to all petroleum contaminated soil treatment facilities.

FISCAL NOTE ON STATE OR LOCAL GOVERNMENT

Regulation No. 401 KAR 48:208 Contact Person: Kelli Reynolds

1. Does this administrative regulation relate to any program, service, or requirements of a state or local government (including cities, counties, fire departments, or school districts)?

Yes X No

If yes, complete questions 2-4.

2. What units, parts or divisions of state or local government (including cities, counties, fire departments, or school districts) will be impacted by this administrative regulation?

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3. Identify each state or federal statute or federal regulation that requires or authorizes the action taken by the administrative regulation.

KRS 224.10-100 and 224.40-305

4. Estimate the effect of this administrative regulation on the expenditures and revenues of a state or local government agency (including cities, counties, fire departments, or school districts) for the first full year the administrative regulation is to be in effect.

(a) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for the first year?

None.

(b) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for subsequent years?

None.

(c) How much will it cost to administer this program for the first year?

No additional cost to the Division of Waste Management

(d) How much will it cost to administer this program for subsequent years?

No additional cost to the Division of Waste Management

Note: If specific dollar estimates cannot be determined, provide a brief narrative to explain the fiscal impact of the administrative regulation.

Revenues (+/-):

Expenditures (+/-):

Other Explanation:

Detailed Summary of Material Incorporated by Reference

I. This administrative regulation incorporates by reference the "ASTM D3042-03 "Standard Test Method for Insoluble Residue in Carbonate Aggregates" modified for a pH of no greater than 4.0; This document describes the test method that covers determination of the percentage of insoluble residue in carbonate aggregates using hydrochloric acid solution to react the carbonates.

This document consists of 4 pages.

II. This administrative regulation incorporates by reference the GRI standard GC-8 "Standard Guide for Determination of the Allowable Flow Rate of a Drainage Geocomposite"; This document is a guide for a methodology for determining the allowable flow rate of a candidate drainage geocomposite.

This document consists of 11 pages.

III. This administrative regulation incorporates by reference the ASTM D6388-99(2005) "Standard Practice for Tests to Evaluate the Chemical Resistance of Geonets to Liquids". This document describes the practice procedures for testing geonet products for chemical resistance with liquid wastes, prepared chemical solutions, or leachates, or both, derived from solid wastes.

This document consists of 4 pages.